International Space Station Program

Launch Support IPT

Team Execution Plan

REV. A - 31 May 1995
8 Aug 1995 clean-up

KSC-ISS-LSu-OO1

Team Execution Plan (TEP)

for the

LAUNCH SUPPORT (LSu) IPT

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TEAM EXECUTION PLAN

for the

INTERNATIONAL SPACE STATION

LAUNCH SUPPORT IPT

31 May, 1995
(8/8/95 clean-up)

REV. A

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APPROVED BY: _____

LAUNCH SITE PROCESSING IPT
NASA PROGRAM - LEAD

/s/ G. Hosmer

APPROVED BY: _____

LAUNCH SITE PROCESSING IPT
BOEING PRIME - LEAD

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LAUNCH SUPPORT IPT
PGOC - LEAD

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ABBREVIATIONS AND ACRONYMS

A/L	airlock
ABCL	As-Built Configuration List
ACOMC	Assembly, Checkout, Operations, Maintenance and Configuration
AIT	Analysis and Integration Team
ASRS	Automated Support Requirements System
BOC	Base Operations Contract (KSC)
CCN	cost charge number
CETA	Crew Equipment Translation Aid
CITE	Cargo Integration Test Equipment
CMG	control moment gyro
COU	Concept Ops Utilization
CSA	Canadian Space Agency
CTV	crew transfer vehicle
DC	Docking Compartment
DDCU	DC-to-DC converter unit
ELM	Experiment Logistics Module (Japan)
EP	equivalent personnel
EVAS	extravehicular activity system
FGB	Functional Cargo Block
GPS	Global Positioning Satellite
GSE	ground support equipment
HP	high pressure
ICD	Interface Control Document
IDD	Interface Definition Document
IP	International Partner
IPT	Integrated Product Team
ISA	Italian Space Agency (translated)
ISPPD	Integrated Schedule Planning Process Document
ISPR	International Standard Payload Rack
ISS	International Space Station
ISSP	ISS Program
JEM	Japanese Experiment Module
JSC	Lyndon B. Johnson Space Center
KICS	KSC Integrated Control Schedule
KSC	John F. Kennedy Space Center
LOMC	Logistics Operations Maintenance Center
LP	Launch Processing
LPPI	Launch Package Physical Integration
LPr	Launch Processing
LP/S	Launch Package/Stage

LSGMS	Launch Site GSE Management System
LSSM	Launch Site Support Manager
LSu	Launch Support
MAAR	Monthly Associate Administrator's Review
MDA	McDonnell Douglas Astronautics
MICB	Mission Integration Control Board
MIF	Management Integration Forum
MIP	Mission Integration Plan
MIPALS	Management Integration of Program and Launch Site
MMSE	Multiuse Mission Support Equipment
MPLM	Mini-Pressurized Logistics Module
MPS	Mission Processing Schedule
MT	Mobile Transporter
NASA	National Aeronautics and Space Administration
NASDA	National Aerospace Development Agency of Japan
O2	oxygen
O&M	operations and maintenance
OMI	Operations and Maintenance Instruction
OMP	Operations and Maintenance Plan
OMRS	Operations and Maintenance Requirements Specifications
OMRSD	Operations and Maintenance Requirements Specifications Document
OP	Operating Procedure
OPS	Operations
OR/OD	Operations requirements/Operations Directive
P3RDB	Prelaunch/Postlanding Processing Requirements Data Base
PDMS	Payload Data Management System
PE	pressurized element
PG	Product Group
PGOC	Payload Ground Operation Contract (KSC)
PICS	Payload Integration Control Schedule
PM	pressurized module
PMA	Pressurized Mating Adapter
PMN	Program Model Number
POC	Point of Contact
POP	Program Operating Plan
PRACA	Problem Reporting and Corrective Action
PRD	Program Requirements Document
PSP	Payload Support Plan
PV	photo-voltaic
PVIS	Program Verification Information System
R&R	Resupply and Return
RAM	Requirements Allocation Matrix
RD	Rocketdyne

RID	Review Item Disposition
RMS	Remote Manipulating System
RS	Requirements Steering
RSA	Russian Space Agency
S/L	Spacelab
S/S	Shuttle to Station
S&MA	Safety and Maintainability Assurance
SE	support equipment
SOW	Statement of Work
SP	Standard Practice
SPC	Shuttle Processing Contract (KSC)
SPP	Science Power Platform
	Standard Practices and Procedures
SSP	Space Shuttle Program
SSPF	Space Station Processing Facility
SSPO	Space Station Program Office
SSRMS	Space Station Remote Manipulating System
TBD	to be determined
TCMS	Test Control and Monitoring System
TCS	Thermal Control System
TEP	Team Execution Plan
TIF	Technical Integration Forum
TPS	Test Preparation Sheet
TTA	Technical Task Agreement
UF	utilization flight
UHF	ultra-high frequency
ULC	unpressurized logistics carrier
UP	unpressurized
UPN	universal program number
U.S.	United States
WAD	Work Authorization Document
WBS	Work Breakdown Structure
WE	worker equivalent

1.0   Introduction

This Team Execution Plan (TEP) provides the Launch Support (LSu) Integrated Product Team (IPT) with a consolidated plan describing the team tasks, structure, products, interfaces, and team processes. Sufficient detail is included to provide the LSu IPT members the guidelines and points of contact (POC) necessary for performing their primary work tasks. Activities and processes are identified as well as the corresponding requirements sources.

This TEP also provides other International Space Station (ISS) IPT/AITs with an LSu IPT Statement of Work to describe how the LSu IPT plans to accomplish the work assigned in the LSu IPT Task Agreement with the ISS Program.

The LSu IPT has the responsibility for the planning, support, and implementation of ISS launch site processing at the John F. Kennedy Space Center (KSC). This IPT will provide support to the Prime and the Product Groups for flight hardware design and development, will provide planning and support for all phases of KSC processing, and has the responsibility for implementing Shuttle integration tasks at KSC.

The authority for the LSu IPT is the Space Station Technical Task Agreement (TTA) KSC0-05 . The LSu IPT is accountable to the Space Station Program Office (SSPO) Launch Site Processing IPT and the Operations IPT.

The TEP is prepared in accordance with requirements and guidelines delineated in ISSA-PD-007, *Team Execution Plans Preparation and Maintenance*, 08 April 1994. This TEP will be reviewed periodically, but at least every 6 months, a review will be conducted by the LSu IPT and revisions incorporated as needed.

The LSu IPT charter is included as figure 1-1.

Purpose	• The LSu IPT is responsible for the planning and execution of Space Station hardware launch processing at KSC, and provides support to the vehicle design and operations planning.		
Scope of work:	• Integration functions, planning, and execution of Space Station processing at KSC • Support to program/Prime/PGs for processing tasks • Support of Space Station hardware design and development • Provide integrated management of processing capability development and processing planning for KSC Space Station operations		
Interfaces:	• Launch Site AIT • Vehicle LP/S IPTs/AITs • Operations IPTs/AITs • Other Launch Site IPTs	• Launch Site Processing IPT • Vehicle Subsystem IPTs/AITs • Shuttle program	
Team Members:	• NASA Team lead • Boeing Prime team lead • PGOC team lead • LPr AIT leads • LPr IPT leads		
Description of Tasks:	• Planning and execution of launch site processing of Space Station elements per program agreements • Development of launch site operations plans and schedules in support of LP/S teams • Provide Launch Site Interface to Shuttle Processing organization • Development of procedures to execute launch site processing • Perform post-mission deintegration support • Development and management of schedule and budget allocated to IPT • Support to development of launch site processing plans by LP/S Teams • Support flight hardware and software design with experienced launch site personnel • Support the development and tracking of launch site processing requirements • Provide launch site input and support to program documentation development and planning		
Authority	• Team budget/cost responsibility • Team schedules, plans, procedures, etc.	• Team Execution Plan • Team Task agreements	
Accountability	• Launch Site *Operations* Manager	• Team budget/cost responsibility	
Deliverables	• Launch Processing schedules and assessments • Operations plans • Budget plans • SE requirements • Deliverables schedules • Team Execution Plan		
Schedule	• *Per TTA Schedules*		
Approval	_____ _____ _____ Launch Site Processing IPT Launch Site Processing IPT Launch Support IPT NASA Program - Lead Boeing Prime - Lead NASA KSC - Lead		

NOTE: Entries shown in *italics* are changes to the approved charter and must be approved through the IPT Charter updating process.

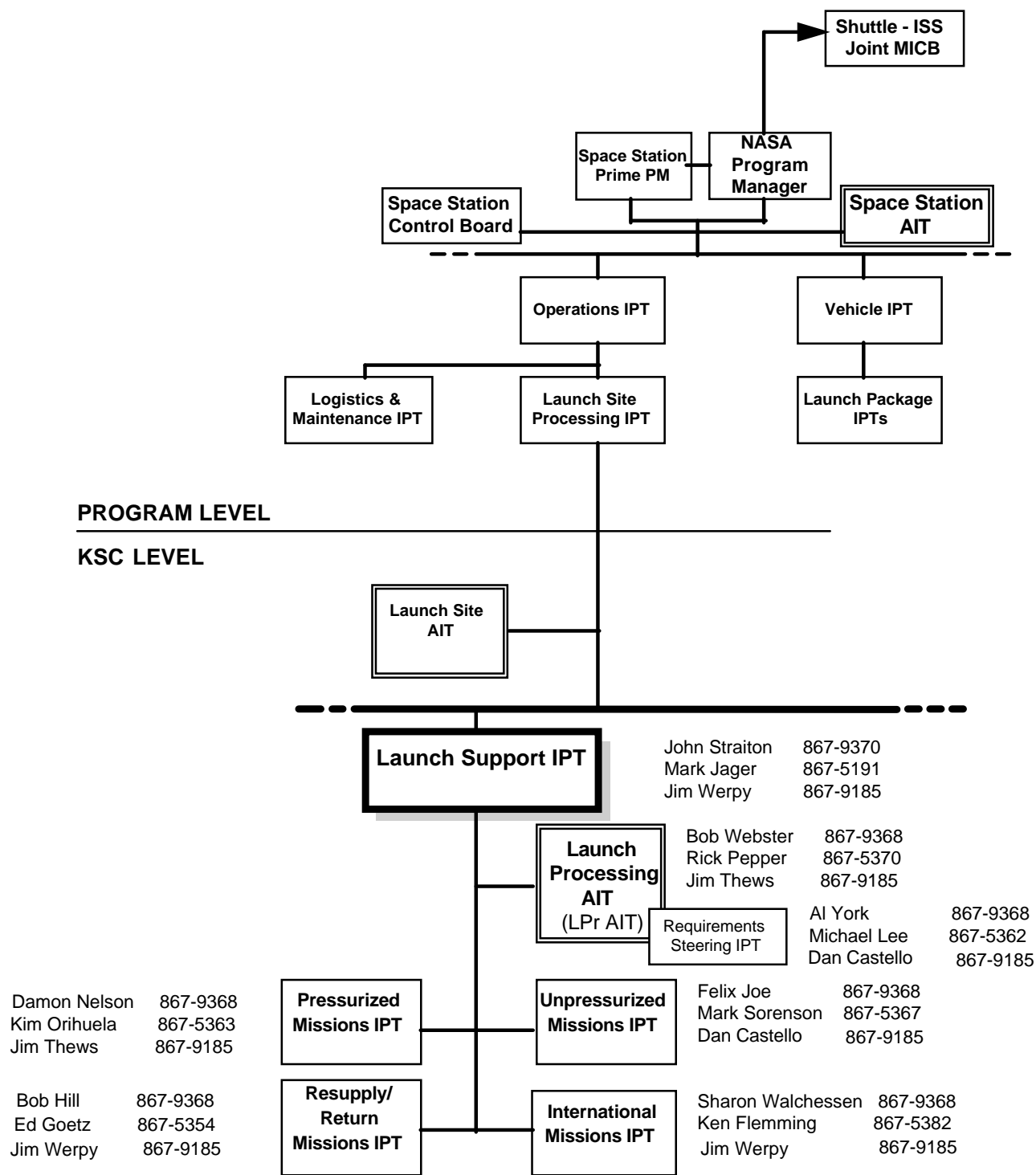Figure 1-1. Launch Support IPT Charter

2.0   Team Organization and Membership

The LSu IPT is one of seven task level IPTs at KSC. The team is primarily composed of NASA, the Payload Ground Operations Contractor (PGOC), and Boeing Prime representivies. Product Group (PG) personnel will also be part of the team during the planning phase, with expanded participation during the launch processing phase. In addition, participation by the International Partners is required for the launch processing of their elements. The LSu team consists of four Launch Processing IPTs that collectively are responsible for the planning of all ISS launch site processing at KSC. During the launch processing phase (beginning about 12 months before launch), a mission-unique team composed of members from appropriate teams, will be formed to implement the processing for each flight. The teams also have membership from other IPTs and functional organizations that provide technical representation throughout the entire launch processing capability development and processing planning. Figure 2-1 illustrates how the LSu IPT fits into the overall structure.

The LSu IPT, using the integrated team concept, is the lead project IPT throughout KSC planning and processing; it is led by a three-person team made up of a NASA/KSC representative, a Boeing Prime representative, and a PGOC representative. As the program proceeds through its phases at KSC, the leadership emphasis and responsibilities shift slightly. The phases of KSC processing are: pre-Shuttle integration, Launch Package Physical Integration (LPPI), Shuttle integration, launch and landing operations, and de-integration (if required). The Prime has responsibility for leading the implementation of pre-Shuttle integration and LPPI operations, whereas NASA/PGOC will assume leadership responsibilities during the Shuttle integration phase and launch and landing operations phase. The notable exception is the Mini-Pressurized Logistic Module (MPLM) processing; NASA/PGOC will be responsible for pre-Shuttle integration.

The present overall LSu IPT structure is shown in figure 2-1; leads' telephone numbers are provided in figure 2-1. The members of the LSu IPT are the core representatives of the LSu IPT and the POC for the sub-teams. These sub-teams are the Launch Processing (LPr) Analysis and Integration Team (AIT), the Requirements Steering IPT, and the four Launch Processing sub-teams: Pressurized, Unpressurized, International, and Resupply and Return (R&R).

LSu IPT operations personnel provide support to the Space Station Vehicle development AITs and IPTs to provide launch processing expertise during the development process. These personnel also gain an understanding of the hardware and software, plus an understanding of the requirements for launch processing.

Shuttle - ISS
Joint MICB

Space Station
Prime PM

NASA
Program
Manager

Space Station
Control Board

Space Station
AIT

Operations IPT

Vehicle IPT

Logistics &
Maintenance IPT

Launch Site
Processing IPT

Launch Package
IPTs

PROGRAM LEVEL

KSC LEVEL

Launch Site
AIT

Launch Support IPT

John Straiton	867-9370
Mark Jager	867-5191
Jim Werpy	867-9185

**Launch
Processing
AIT**
(LPr AIT)

Bob Webster	867-9368
Rick Pepper	867-5370
Jim Thews	867-9185

Requirements
Steering IPT

Al York	867-9368
Michael Lee	867-5362
Dan Castello	867-9185

Damon Nelson	867-9368
Kim Orihuela	867-5363
Jim Thews	867-9185

**Pressurized
Missions IPT**

**Unpressurized
Missions IPT**

Felix Joe	867-9368
Mark Sorenson	867-5367
Dan Castello	867-9185

Bob Hill	867-9368
Ed Goetz	867-5354
Jim Werpy	867-9185

**Resupply/
Return
Missions IPT**

**International
Missions IPT**

Sharon Walchessen	867-9368
Ken Flemming	867-5382
Jim Werpy	867-9185

LAUNCH PROCESSING IPTs

Figure 2-1. Launch Support IPT Structure

3.0   Statement of Work (SOW) and Work Breakdown Structure (WBS)

There are two separate portions of the Launch Support IPT: the support provided by the Prime and the support provided by NASA/PGOC. The Prime receives its funding through the overall Prime SOW, which also includes PG support. NASA/PGOC funding is provided from the Space Station Technical Task Agreement (TTA) number KSCO-05, which funds both NASA and PGOC support.

The NASA/KSC portion of the LSu IPT has budget allocations from UPN 475/work breakdown structure (WBS) 25 (development) and UPN 575/WBS 27 (operations and maintenance). In general, the development UPN allocates budget for the manpower and material costs to define, design, procure, and validate items, whereas the operations and maintenance UPN allocates budget for manpower and material to keep the items operational for the life of the program. Specifically, the LSu IPT is responsible for the integrated management, planning, and execution of the launch site processing of ISS elements per program agreements. This team also manages the requirements associated with the development of processing capability

The LSu IPT WBS is broken down into 12 item groupings. Table 3-1 defines the KSC/PGOC Launch Support WBS.

<div align="center">Table 3-1. KSC/PGOC LSu IPT WBS Structure</div>

PROGRAM WBS	KSC WBS	Item
1.5.2.5.1.1 & 1.5.2.5.2.1	25.05.01.00 & 27.05.01.00	Launch Processing AIT Support
1.5.2.5.1.2 & 1.5.2.5.2.2	25.05.02.00 & 27.05.02.00	Pressurized IPT Support
1.5.2.5.1.3 & 1.5.2.5.2.3	25.05.03.00 & 27.05.03.00	Unpressurized IPT Support
1.5.2.5.1.4 & 1.5.2.5.2.4	25.05.04.00 & 27.05.04.00	Resupply/Return IPT Support
1.5.2.5.1.5 & 1.5.2.5.2.5	25.05.05.00 & 27.05.05.00	International IPT Support
1.5.2.5.1.6 & 1.5.2.5.2.6	25.05.06.00 & 27.05.06.00	Flight Hardware/Systems Design Analysis and Integration

Prime Contractor support to the LSu IPT is defined in the Prime Contract SOW, paragraph 1.5.2, Launch Site Processing. Budget and schedule are managed at this level by the Launch Site Processing IPT. The following specific points in the Prime SOW define the scope of Prime Contractor support to the LSu IPT:

"a.   The Contractor shall perform analyses to determine requirements (DRs OP03 and VE20) applicable to prelaunch and postlanding processing of all ISS elements, and Launch Packages.

b.   The Contractor shall use data, requirements, and processes identified in paragraph 1.3.1.5 to define, develop, implement and manage the processing of Launch Package flight hardware at the launch site. The Contractor shall coordinate the scheduling of processing activities at the launch site."

"c.   The Contractor shall document ground support equipment (GSE) functional requirements data in the Support Equipment Item Descriptions (DR VE18)."

As Prime, Boeing is responsible for the transportation and delivery of all PG Space Station flight hardware and GSE to the Space Station Processing Facility (SSPF) at KSC. However, the Prime may contract with the appropriate PG, who will have custody of the hardware and be responsible to the Prime for delivery of the flight hardware and GSE. The Prime, with support from KSC, is responsible for the receiving inspection, installation, preparation, and activation/validation testing of all PG GSE with support from the appropriate PG. PG GSE items that stay at KSC become permanent responsibility of KSC.

4.0   Technical Description and Team Deliverables

The Launch Support IPT will provide integration planning and implementation of ISS Program (ISSP) launch site processing requirements at KSC. Launch and landing site requirements (integration, test, support) are levied on LSu IPT personnel from the Space Shuttle program (SSP) and ISSP for review and comment. LSu IPT personnel analyze and determine how the integration, test, maintenance, servicing, and support requirements will be satisfied; they then develop a Requirements Allocation Matrix (RAM) for requirements in the OMRSD that will allocate each requirement to a Work Authorization Document (WAD). Many of the WADs will be multi-mission procedures that are generically written. All requirements satisfied within the WADs are then tracked using the RAM to determine that the requirements are satisfied prior to launch. A Mission Processing Schedule (MPS) will be developed to identify the need dates for resources and dependencies, determine the critical path(s) for element processing, and show the chronological order in which the integration and test requirements will be implemented. Support requirements are committed by Program Requirements Document (PRD)/Program Support Plan (PSP). The Prime, PGs, and International Partners will provide input to WADs, schedules, and PRD preparation and will participate in reviews of these products.

1. Launch and landing requirements will be provided to the LSu IPT in the following:

    - Program Verification Information System (PVIS)/Assembly, Checkout, Operations, Maintenance and Configuration (ACOMC) Requirements Data System
    - Launch Site Support Requirements (PRD - Automated Support Requirements System [ASRS])
    - Operations and Maintenance Requirements and Specifications (OMRS)
    - Mission Integration Plan (MIP) and MIP annexes
    - Safety Compliance Data Assessment

2. Team Products and Support Activities:

    a. Launch Processing schedules and assessments
    b. Operations plans
    c. Budget plans
    d. Support Equipment (SE)/Test, Checkout, and Monitoring Subsystem (TCMS) requirements
    e. Mission deliverable schedules
    f. Team Execution Plan
    g. IDR-unique Launch Site Processing Plan
    h. Launch Site Processing Package
    i   Manifest assessments
        - Multiflow assessment schedules
        - "What-if" processing assessment schedules
    j. Mission Deliverable schedules
    k.   Master Milestone schedules
    l. Mission Processing schedules
        - Mini-Processing schedules

m. Payload Integration Control Schedule (PICS)

n. Launch Site Support Plan (LSSP)
- PRD
- PSP
- Operations Requirements/Operations Directive (OR/OD)

o. Operations and Maintenance Plan (OMP)

p. WADs [e.g., Test Preparation Sheets (TPSs), Operations & Maintenance Instructions (OMIs), etc.]

q. As-Built Configuration List (ABCL) - for R&R missions only

r. Problem Reporting and Corrective Action (PRACA)

s. SE requirements

t. Resource Utilization studies

u. Launch Site Processing and Support Services

v. Inputs to integrated planning and budgeting

w. Support to AITs/IPTs

x. Support to system level and above design reviews

y. Support to factory test and checkout operations (MPLM only)

z. Develop test and checkout software requirements
- TCMS for R&R missions

aa. Support to test and checkout requirements development

bb. Support to the SE IPT
- SE validation
- SE operations and maintenance

cc. Support to MIP and MIP Annexes development

5.0   Subcontractor Requirements

KSC is supported by three primary support contractors, including the Shuttle Processing Contractor (SPC), the Base Operations Contractor (BOC), and the PGOC. The LSu IPT receives its primary support from the PGOC. There is no direct support to the LSu IPT from subcontractors.

Prime Contract subcontractors include the PGs:

     a) PG1: McDonnell Douglas, Huntington Beach
     b) PG2: Rocketdyne, Canoga Park
     c) PG3: Boeing, Huntsville

PG responsibilities include delivery of data, implementation of mission-unique Pre-Integration and deintegration operations at the launch site, and sustaining engineering support (sustaining engineering contract with the Prime is pending at this time) to Shuttle Integration and launch and landing operations.

In addition to the standard program level data (e.g., drawings, specifications, etc.) provided by the PGs, ground operations requirements data to be delivered to the Prime Contractor (via SS-OP-003) by the PGs include the following:

     a) Launch Site Support Requirements
     b) ACOMC requirements, specifically limited to those requiring development of procedures
         or software and dynamic displays
     c) OMRS Requirements

The PGs will participate as a part of the LSu IPT on a phased basis and as need dictates. PG involvement in the LSu IPT will increase as a function of the proximity to start of hardware processing at KSC. During processing of the PG hardware, the PG role in the IPT will be at a maximum level to enhance the coordination of launch site services and scheduling. During Shuttle integration (CITE and Orbiter), the sustaining engineering contractor (sustaining engineering contract with the Prime is pending at this time) will provide support to the IPT and participate in preparing close-out documentation and closing out processing requirements.

6.0   Interface Requirements

The Launch Support flight hardware systems/elements have interfaces with support equipment, facilities, test systems, and SSP that are inter-operative and require interaction with other IPTs, the SSP, and KSC contractors. The following is a listing of IPTs and other organizations that routinely communicate with the Launch Support IPT in the planning and execution of launch site processing of ISS elements, their outfitting, and user flights.

IPT/ORGANIZATION NAME	RESPONSIBILITY TO LAUNCH SUPPORT IPT
Launch Site Processing IPT	Provide LSu IPT an overview of the Program level philosophy and represent the LSu IPT point of view to the program
Launch Site AIT	Provide analysis and integration of LSu IPT products within the launch site areas of responsibilities
Vehicle Systems IPTs	Supply system requirements, interface data, test and operations definition
Vehicle Test and Verification IPT	Review/assess LSu IPT-developed estimates on implementation of test and checkout requirements, validate/approve launch site test and checkout requirements
(Program Level) SE IPT	Integrate all ISS Prime SE item needs and allocate development responsibility to appropriate team
International Partner IPTs	Supply prelaunch and postlanding operations requirements, test and checkout requirements, and interface data; deliver flight hardware to KSC, perform pre-shuttle integration test and chechout, and support shuttle integration test and checkout
Launch Package and Stage IPTs	Supply prelaunch and postlanding operations requirements, test and checkout requirements, interface data; deliver flight hardware to KSC, perform pre-integration test and checkout, and support Launch Package physical integration and shuttle integration test and checkout

Cargo Planning and Analysis IPT	Provide cargo load plans, cargo, and configuration control drawings; coordinate delivery of cargo to KSC; support integration/deintegration of cargo
KSC Support Equipment IPT	Responsible for all KSC-developed ISS SE planning, development, acquisition, and activation
KSC Facility Systems IPT	Provide facility and facility systems for launch processing testing and operations support
KSC TCMS IPT	Provide TCMS services and support for MPLM element test and checkout
KSC Logistics IPT	Provide logistical support and resources for flight hardware maintenance, fleet resource management, and prelaunch/postlanding and resupply/return operations
KSC Utilization IPT	Supply utilization flows and launch processing support requirements and interface data; provide staged hardware
KSC S&MA IPT	Provide Safety and Maintainability Assurance (S&MA) support of all Launch Processing planning and execution activities
KSC Payload Ground Operations Contractor	Support ISS preintegration test and checkout, perform shuttle integration test and checkout, and support/perform processing activities related to ISS/SSP integration and deintegration
KSC NASA TM Directorate and Shuttle Processing Contractor	Perform Shuttle prelaunch and postlanding ground processing operations to support ISS launch package
KSC Base Operations Contractor	Provide KSC base operational services and support
Space Shuttle Program	Provide MIP, MIP annexes, and other related SSP documentation, products, and support required for ISS/SSP integration and deintegration

Interface documentation required by the LSu IPT for ISS processing is shown in table 6-1. LSu IPT deliverables are listed in section 4.

Table 6-1. Launch Support IPT Required Documentation

DOC NO./PRODUCT	DOCUMENT/PRODUCT TITLE
D684-10020-1	PROGRAM MASTER INTEGRATION AND VERIFICATION PLAN
D684-10021-1	PROGRAM VERIFICATION INFORMATION SYSTEM (PVIS) PROCESS DOCUMENT
D684-10652-1	LAUNCH PACKAGE INTEGRATION MANAGEMENT PLAN
SSP 30223	PROBLEM REPORTING AND CORRECTIVE ACTION (PRACA)
SSP 50004	SS PROGRAM SUPPORT EQUIPMENT DESIGN REQUIREMENTS
SSP 50011-01	CONCEPT OF OPS AND UTILIZATION (COU) VOL. 1 PRINCIPLES
SSP 50011-02	CONCEPT OF OPS & UTILIZATION (COU) VOL. II MISSION SCENARIOS AND MISSION PROFILES
SSP 50011-03	CONCEPT OF OPS AND UTILIZATION (COU) VOL. III: PROCESSES
DR-OP-03	PRE-LAUNCH POSTLANDING OPERATIONS REQUIREMENTS (PG AND PRIME UNIQUE)
NSTS 07700, VOL 14	SPACE SHUTTLE PAYLOAD ACCOMMODATIONS
NSTS 07700, VOL 10	SPACE SHUTTLE FLIGHT AND GROUND SYSTEMS SPECIFICATION
NSTS-2100-IDD-ISS	SHUTTLE ORBITER/INTERNATIONAL SPACE STATION INTERFACE DEFINITION DOCUMENT (IDD)
ICDs (TBD)	SHUTTLE ORBITER/CARGO INTERFACE CONTROL DOCUMENTS (ICDs) (MISSION UNIQUE)
MIPs & MIP ANNEXES	MIPs AND MIP ANNEXES (MISSION UNIQUE)
NHB 1700.7B	SAFETY POLICY AND REQUIREMENTS FOR PAYLOADS USING THE SPACE TRANSPORTATION SYSTEM

Table 6-1. Launch Support IPT Required Documentation (cont'd)

DOC NO./PRODUCT	DOCUMENT/PRODUCT TITLE
AS APPROPRIATE	SHUTTLE TEMPLATE PRODUCTS
NSTS 13830	IMPLEMENTATION PROGRAM FOR STS SYSTEM SAFETY REQUIREMENTS
SSP 50021	SPACE STATION SAFETY REQUIREMENTS
45 SPW HB S-100/KHB 1700.7	SPACE SHUTTLE PAYLOAD GROUND SAFETY HANDBOOK
ECL	ENGINEERING CONFIGURATION LIST (for MPLM only)

7.0   Resources and Cost Control Reporting

This section describes the various processes used by the KSC LSu IPT to manage and forecast its resource requirements. The LSu IPT resources (equivalent personnel [EP] and material costs) are approved by the Program Operations Manager in accordance with Technical Task Agreement (TTA) KSC0-05 WBS# 25.05. The LSu IPT is responsible for managing its resources and providing variances to the Launch Site AIT and the ISS program. The LSu IPT uses both the TTA and ISS program cost charts (Epp Charts) for submitting resource data. These resource management formats are updated after a Program Operating Plan (POP) assessment, ISS program budget exercises, and used for development of fiscal year Operating Plans (FY OPPLANs).

The LSu IPT will develop its POP submit based on the guidelines it receives from the ISS program and the Budget AIT. This submit will include all resource requirements (PGOC and Non-PGOC) the IPT determines it needs to perform all tasks associated with Launch Support activities. This submit is a joint activity between the NASA and PGOC personnel assigned to LSu IPT. Additionally, the PGOC functional groups may participate in this assessment activity.

The Budget AIT will integrate the IPT submit with the other IPT inputs to formulate the KSC Launch Site POP submit. The Launch Site AIT will review each IPT's submit prior to it being submitted to the ISS program. The ISS program will review the submit and make assessments as required based on budget constraints and changing program guidelines. The assessment marks will be sent to KSC and distributed by the Budget AIT. The assessment marks are then incorporated into the team's TTA and ISS program cost charts (Epp Charts).

The LSu IPT incorporates the POP assessment cost marks for the upcoming Fiscal Year (both PGOC and Non-PGOC) into the TTAs and Epp Charts, and updates and/or develops its Work Order and WBS tree for the new FY. Program Control will issue Cost Charge Numbers (CCNs) that correspond to the WBS for each IPT/AIT. The FY OPPLAN is completed prior to the start of the FY. The Budget AIT will determine the milestones needed to meet this requirement. The development of the FY OPPLAN is a joint activity between the NASA and PGOC personnel assigned to each IPT/AIT. Additionally, the PGOC functional groups may participate in this OPPLAN activity.

The Budget AIT will integrate all IPT/AIT inputs and will finalize the FY OPPLAN input to the Launch Site AIT and the ISS program.

The LSu IPT is responsible for managing its FY OPPLAN. The Budget AIT will produce and distribute standardized resource management reports and metrics (OPPLAN versus Actuals for Worker Year Equivalents [WYEs], ODC, and Total Cost) for each IPT/AIT. The Budget AIT will coordinate all resource management special exercises, such as FY OPPLAN year end forecasts, and integrate financial reports going to the Launch Site AIT and the ISS program. Any changes to the FY OPPLAN will be coordinated through the Budget AIT and Launch Site AIT prior to incorporation/implementation by the LSu IPT.

The Budget IPT sends weekly WYE reports to the LSu IPT to track actuals against the OPPLAN and monthly metrics which track WYEs, ODC, and Total Cost for each IPT and the entire KSC ISS program by UPNs.

Special financial reports and metrics are done at the direction of the Budget AIT as required.

The LSu IPT is responsible for providing variance explanations to the Launch Site AIT for monthly budget performance during the Monthly Associate Administrator's Review (MAAR) held at the beginning of each month. Variance thresholds for budget performance are determined by the Budget AIT. The IPTs are responsible for providing WYE and ODC variances against the OPPLAN and the TTA, while the Budget AIT tracks total costs for each IPT and at the UPN level. Metrics for each parameter are maintained by the Budget AIT.

The LSu IPT is responsible for managing its Travel budget. Based on program requirements, each IPT/AIT will submit travel requirements for IPT-related travel to the Budget AIT. The Budget AIT in conjunction with the KSC Launch Site AIT will assess and distribute the FY travel budget for each team. The Budget AIT will produce monthly metrics for each IPT that will track actual costs to assist the IPTs in managing their budgets. The Budget AIT is responsible for redistributing travel funds in the event that an IPT/AIT team needs additional funding.

8.0   Logic Networks and Schedules

The Launch Support IPT develops schedules in accordance with program-established need dates and flight manifest schedules per the Integrated Schedule Planning Process Document (ISPPD) guidelines.

List of logic networks and schedule titles follow:

-   Integrated Schedule Planning is done on one data base at KSC. Individual IPT teams develop, maintain, and control their own detailed schedules. Those detailed schedules are rolled-up into a common data base that includes external milestones/drivers used by the IPTs to plan, manage, and track their work.

    One set of KSC data is sent to the Lyndon B. Johnson Space Center (JSC) to be included on the "Common Schedules Database" along with inputs from other product groups. LSu team leads will approve all data prior to transfer to JSC.

    -   The Payload Data Management System (PDMS) is a network of databases used throughout the KSC prelaunch and postlanding processing environment. This network provides the capability for various functional areas within the prelaunch processing environment to do day-to-day scheduling and resource allocation to see if any conflicts exist. This PDMS database will also feed into the PICS for the 72-hr/11-day scheduling of tasks.
    -   Mission Processing Schedules
    -   Mini-processing schedules
    -   Deliverable schedules
    -   Multi-mission integration schedules
    -   Resource histograms
    -   KSC Multiflow Schedules for long range planning and manifest option assessments
    -   KSC Integrated Control Schedules (KICS), the integrated schedule system for all space shuttle processing

9.0   Team Responsibilities

9.1   LSu IPT Overview

The LSu IPT is composed of members from different departments/functional line organizations and companies to develop the products/support for the ISSP. Each member has responsibilities to fulfill in order to ensure the success of the IPT and its assigned products. In addition, four LPr IPTs, a Requirements Steering (RS) IPT, and one AIT have been created under the LSu IPT to focus on distinct subsets of LSu IPT responsibilities during the processing phase.

The primary focus of the LSu IPT and its sub-teams is to provide the planning, implementation, and verification for the support of the Launch and Landing Site requirements as defined by the ISS and Shuttle programs. The LSu IPT has budget and schedule responsibility for the resources required to perform and support prelaunch and postlanding processing of the ISS flight hardware. The LSu IPT has ultimate organizational ownership of all products produced by itself and its supporting teams. Additionally, the LSu IPT will assume operational and maintenance (O&M) responsibility for SE retained at KSC, after activation/validation.

9.2   Launch Support IPT Team Members

The LSu IPT is managed by a team of three co-chairpersons representing the various affected organizations - NASA, PGOC, and Prime Contractor. The primary responsibility of the team leadership is to ensure administration of launch support resources to the ISSP and to provide coordination for the LPr IPTs. The leadership of the LPr AIT and the LPr IPTs make up the membership of the LSu IPT. Table 9-1 defines team member functions and responsibilities.

The support and coordination provided by the LSu IPT leadership to the LPr AIT and sub-team IPTs are focused in the areas of resource allocation and management, activity prioritization, and issue resolution. Issues that require integration with other launch site IPTs are identified and resolved in the Mission Integration Forum (MIF), which is the second level of the launch site integration forums developed and defined to work specific issue resolution. The MIF is organized and sponsored by the LSu IPT and its leadership. The LSu IPT is also responsible for the integration and resolution of any unresolved issues that cross additional (non space station) KSC or NASA organizational boundaries.

Table 9-1. LSu IPT Membership and Responsibilities

Membership	Responsibilities
KSC LSu IPT Functional Managers	Maintain administrative and supervisory authority over the resources controlled by the LSu IPT
LSu IPT Chief Engineer	Perform as LSu IPT engineering authority in areas related to the definition and implementation of requirements and flight hardware processing at the launch site
LPr AITLeads	Serve as point of contact within LSu IPT for issues crossing boundaries of LPr IPTs
LPr IPTLeads	Function as POC within LSu IPT for actions assigned to specific LPr IPTs, provide status reports on team activities, perform coordination and consolidation of LPr IPT's inputs to LSu IPT

9.3   Launch Processing AIT and IPTs

9.3.1   Launch Processing AIT. The LPr AIT is managed by co-chairpersons from the NASA, PGOC, and Prime contract organizations. Other members of the team perform functions as described in table 9-2.

The support and coordination provided by the LPr AIT leadership is focused on those issues that cross the boundaries of more than one of the LPr IPTs. The LPr AIT manages and integrates launch processing operations that involve multiple LPr IPTs. The AIT performs analysis; assigns and tracks action items; prepares assessments for the LSu IPT; integrates the budget and schedule for Launch Support IPT; and reports issues, concerns, threats, or risks to the LSu IPT. Issues that require technical integration with other launch site IPTs are identified and resolved in the Technical Integration Forum (TIF), which is the first level of launch site integration forums developed and defined to work issues requiring technical integration. The TIF is organized and sponsored by the LPr AIT and its leadership.

Table 9-2. LPr AIT Membership and Responsibilities

Membership	Responsibilities
KSC LSu IPT Functional Managers	Maintain administrative and supervisory authority over the resources controlled by the LSu IPT
LSu IPT Chief Engineer	Perform as LSu IPT Engineering authority in areas related to requirements definition for flight hardware processing at the launch site
LPr IPTLeads	Function as POC within LSu IPT for actions assigned to specific LPr IPTs; provide status reports on team activities; perform coordination and consolidation of LPr IPTs inputs to LPr AIT; assist with the analysis and integration performed by the AIT
Launch Site Support Manager/Engineer	Responsible for Shuttle program documentation development; serve as a primary interface for support requirements
Prime Contractor Personnel	Represent the Prime's areas of responsibilities in ground processing
Product Group Personnel	Represent the PG's areas of responsibilities in ground processing
Requirements Integration Engineer	Provide interface to program requirements systems and processes; manage KSC development of requirements system implementation for processing.
Manifest/Multiflow Engineer	Develop KSC multiflow and manifest assessments

9.3.2   Launch Processing IPTs.   There are currently four IPTs responsible for the planning and implementation of Launch Package processing at the Launch Site. These IPTs will perform hardware process planning and operational flow development, identify and track external dependencies, perform interface verification test and checkout functions, perform detailed tracking of assigned requirements, and provide input to assigned actions from the LSu IPT or LPr AIT. In general, these teams will use existing processes and procedures for the planning and implementation of activities at KSC.

The Pressurized, Unpressurized, and International IPTs are primarily responsible for those activities associated with Shuttle integration while providing Host role support for those activities occurring at the launch site prior to the start of Shuttle Integration. The R&R team is responsible for all activities associated with the MPLM and its subelements following initial turnover during the MPLM first launch processing flow. This team is also responsible for the planning and implementation of all activities associated with other logistical carriers beginning with Shuttle integration for the first flow and continuing throughout the life of the program.

Each team is composed of personnel holding functional responsibilities as described in table 9-3.

Table 9-3. Launch Processing IPT Membership and Responsibilities

Membership	Responsibilities
Manager	Manage the LPr IPT; serve as prime point of contact and LPr team lead; provide overall responsibility for the development of products assigned to the LPr IPT
Prime Contract Resident	Responsible for the integration of Prime Contract activities with Launch site activities
Integration Engineer	Responsible for the integration of all engineering discipline requirements and development of technical operations activity planning
Operations Engineer	Coordinate the daily activity planning, manifest & multiflow assessment inputs, as well as processing schedule development efforts.
Systems Engineer	Function as system specialist and POC for assigned systems; responsible for system level product development and operations planning; serve as primary interface to SE IPT
Launch Site Support Manager/Engineer	Responsible for SSP requirements development and documentation
Logistic Engineer	Serve as primary interface to Logistical systems planning and design
Safety Engineer	Serve as primary point of contact for Safety Assessments and issues; serve as Safety organization representation and signature authority for IPT for safety organization
Design Engineers	Serve as equipment design specialist for KSC developed SE
PG Representative	Represent the PG's areas of responsibilities in ground processing
Quality Representative	Serve as primary point of contact for Quality assessments and issues; serve as Quality organization representative
Utilization Representative	Serve as primary POC for deliverables from the Utilization organization; responsible for performing coordination of activities between the LPr IPT and Utilization IPT
Integrated Requirements Engineer	Provide interface to program requirements systems and processes

9.3.3   Requirements Steering IPT. The RS IPT is chartered as a functional arm of the LPr AIT to apply requirements integration approaches consistently across all the LPr IPTs. This includes the responsibility for developing an interface to the PVIS/ACOMC system. Other areas of responsibility include accounting for programmatic requirements allocated to KSC, interfacing with OMRS, and support requirements gathering systems. Membership includes NASA KSC, Boeing Prime, and PGOC personnel.

10.0 Team Processes

This section describes the existing processes the LSu IPT uses to manage its planning and processing activities. The planning process used by the LSu IPT involves the integration of resources within the IPT and the tracking and prioritization of action items and schedules. The planning process of the LPr IPTs involves the coordination with the LP/S IPTs in the development of the launch package flows, procedures, and the schedules required for launch site processes. In addition, the LPr IPTs will identify launch site capabilities (facility, SE, O&M), and coordinate issues and action items with the LSu and LP/S IPTs as required.

10.1   Strategic Plan. One of the most important team processes is the Strategic Plan. The Plan's objective is to measure and document individual LSu team's progress. Measurement will be made against goals set by the LPr AIT and individual milestones established by the sub-teams. These measurements will be used in tracking the progress of these strategic goals as a status indicator of LSu IPT planning. Progress will be measured in schedule and data base forms. The Plan's milestones will be updated monthly and presented in the LSu IPT regular monthly meeting. Variances from planning milestones will be reviewed for each sub-team for a 2-year window. The first year will be most detailed; the second year will be less detailed. The Strategic Planning Metric database will provide the AIT and subteams with a localized point of information that will identify progress made by the subteams.

10.2   Action Items. During the development phase of ISS systems, program and PG launch support actions are assigned to KSC. Actions unique to a specific LPr IPT go directly through those groups. Other actions come through the Launch Processing AIT and are then assessed, prioritized, and assigned. The appropriate team is formed, with a team response developed. This response is reviewed by the LPr AIT and provided to the requester.

10.3   Launch Site GSE Management System (LSGMS). The system used by the LSu IPT to plan for GSE needed for ISS launch site activities is the LSGMS. The ground support requirements are derived from program and PG flight designs, and ground systems at KSC are validated for requirements support. Figure 10-1 shows the development process of SE requirements up to the baselining of program model numbers (PMNs), which initiates the design phase of SE development. For the remainder of the GSE management process - design through turnover, reference *ISS KSC SE Verification Management Plan* (KSC-ISS-SEQ-017).

10.4   Launch Site Support Requirements. Existing processes will be utilized to ensure effective identification and implementation of Launch Site Support Requirements. Launch Site Support Plans (MIP Annex 8) and Readiness Reviews will be applied to the ISS program. Reference, K-STSM-14.1, *Payload Accommodations Handbook*, and NSTS 07700, Volume XIV, Appendix 5, "Ground Operations."

10.5   Program Verification Information System (PVIS). Program requirements for the ISS are managed through the PVIS. KSC participates in this process through the integrated effort of its Launch Support IPT and RS IPT. The RS IPT also interfaces with the Shuttle program OMRS Documentation (OMRSD) system (SPP 0-08). The RS IPT derives and coordinates requirements with the LSu IPT. The RS IPT is the KSC representative on program-level requirement teams.

10.6   Prelaunch/Postlanding Processing Requirements Database. The Prelaunch/Postlanding Processing Requirements Data Base (P^3RDB) is an interim database to be used by the LSu IPT until the

OMRSD and PVIS databases are generated. The P^{3}RDB compiles high level program requirements, principles, guidelines, etc., that influence KSC planning for Space Station flight hardware processing. The database may also contain requirements derived from higher levels.

10.7   Operations And Maintenance Requirements And Specifications Document. The OMRS (described in detail in NSTS 08171, file I) provides the organizational level operations, maintenance, data and analysis requirements, and specifications for Space Shuttle payloads and ground systems that are necessary for Shuttle integration and KSC institutional support. The OMRS is the collection of the Space Shuttle payload prelaunch, launch, postlanding, and turnaround requirements from the Space Shuttle payload owners, contractors, NASA centers, and/or agencies responsible for identifying the requirements. The Shuttle integration test and checkout requirements are approved as annex 9 to the MIP. The applicable OMRS files for Space Station processing are file II, volume II, which will document all of the Space Station-to-Space Shuttle interfaces, and file VI, volume IV which will identify all of the Crit 1 and Crit 2 GSE requirements.

10.8   Work Authorization Documents. The WAD system used at KSC is described in Standard Practice (SP) 8.007-A91: Operations and Maintenance Instruction (OMI) Preparation, Publication, and Implementation, change B dated Dec. 16,1992 (under revision to become Standard Practices And Procedures (SPP) 0-04). Procedures needed to perform KSC prelaunch and all postlanding operations will be developed in accordance with existing processes for KSC WADs, with modifications as necessary for ISS.

All Launch Site O&M requirements, program and test requirements, and KSC operational and safety requirements will be incorporated into the KSC WAD system as the O&M Plan and reviewed by all applicable program, PG, and KSC organizations.   Reference KCA-HB-0018.0, *STS Payload Operations Work Authorization Document Handbook* and SPP-04 xxxxxxx

The Prime, PGs, and IPs may use their individual WAD systems to perform work at KSC for which they have the lead performance responsibly. Areas of lead responsibility include, but are not limited to, shipping, receiving, inspection, functional checkout, launch package assembly, and sustaining engineering. The Prime, PG, and IP WADs will be provided to KSC for review, as agreed to in the LSSP. The LSu IPT review will be conducted according to SP 8.007-A91, section I, e. procedure ii: "Review of STS Customer-Provided Procedures". KSC/PGOC will develop WADs to implement support requirements for the operations for which the Prime, PGs, and IPs have lead responsibility. PGOC WADs will be developed per the reference SP, for tasks for which KSC/PGOC has the lead performance responsibility. The Prime, PGs, and IPs will provide procedure inputs or develop sub-task WADs for support to integrated operations for which KSC/PGOC has lead implementation responsibility.

SE Requirements
Development Process - Flow

Alpha

Program Rqmts Identified — Sys. Engineering [1]

Develop Flt H/W Processing Flow (s) — LPr / Util.-IPT (s) [2]

Appoint Lead Tech. Contact — System Eng. Mgmt. [3]

LPr-IPT or Util. IPT briefs flow(s) to LPr-AIT — LPr-AIT [4]

Top Level SE Functional Descript. Defined — Sys. Engineering [5]

Establish SE Sub-IPT Tech. Contact — Sys. Eng./SE Sub-IPT [6]

[7] Require New PMN? — Sys. Eng / SE Sub-IPT Tech Contacts
- No
- Yes

Update PMN Summary (SESS) — Sys. Engineering [13]

Develop New PMN Summary (SESS) — Sys. Engineering [8]

Provide Util-IPT/LPr-IPT with copy of Summary (SESS) — Sys. Engineering [14]

Enter Prelim. LSGMS PMN Data — LSGMS Data Entry [9]

[10] SESS Concurrence — LPr / Util.-IPT Lead(s)
- A
- No
- Yes

[11] SESS Concurrence — LPr-AIT
- Yes
- No

[12] Further Info Required? — LPr AIT
- Yes
- No

Terminate Action

Lock-out LSGMS Gen. Description — LSGMS Data Entry [11A]

RECEIVE SESS & PRELIM. DATA — SE-AIT [15]

DEVELOP REQUIREMENTS/RESPONSES — LPr / SE-Sub IPT's [16]

[17] MAJOR CHANGE REQUIRED? — SE-Sub IPT
- YES
- NO

KSC EVALUATION AND APPROVAL — SE- IPT/LPr-AIT [18]

[19] PROGRAM APPROVAL — Program
- A
- NO
- YES

BASELINE / REVISE PMN — SE-IPT [20]
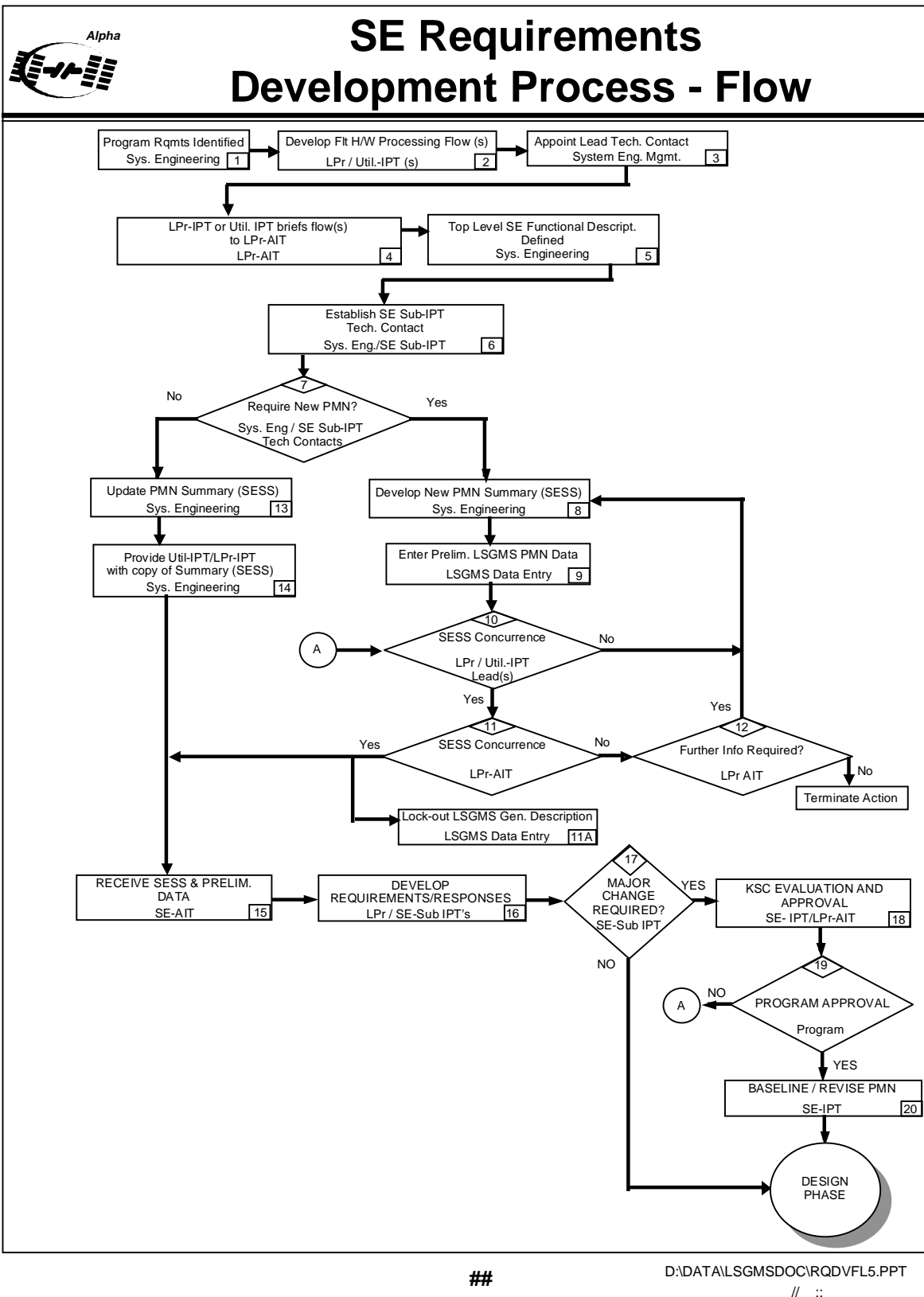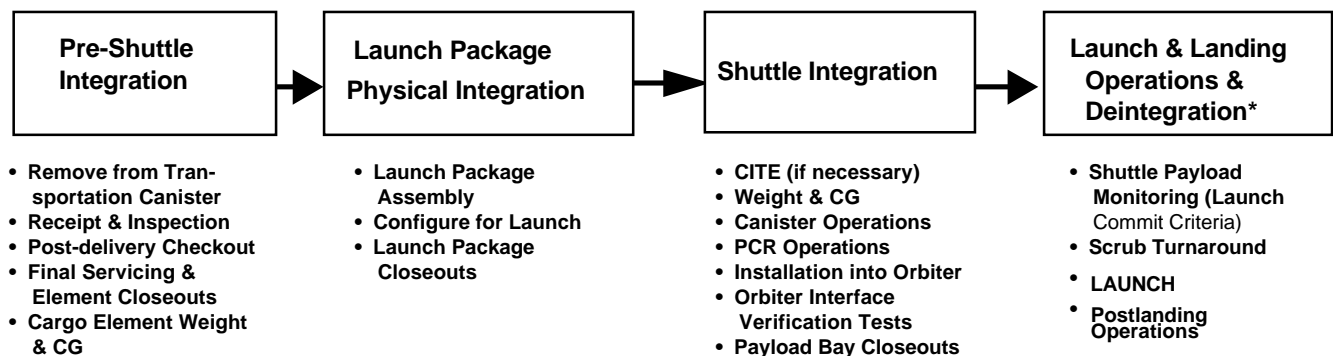
DESIGN PHASE

##

Figure 10-1. LSGMS/Support Equipment Requirements Development Process

10.9   Schedule Development. The Launch Support IPT provides processes for the development of schedules per section 8.0, Logic Networks and Schedules. In addition, the LSu IPT coordinates with the SE IPT to provide Level V schedules for SE as requested in the *ISS KSC SE Verification Management Plan* (KSC-ISS-SEQ-017).

10.10   Management Integration of Program and Launch Site (MIPALS). During the planning of Launch Support to the ISSP, a process of integrating technical, management, and programmatic issues among IPTs at KSC has been developed. This process integrates the TCMS, SE, LSu, Logistics Operations Maintenance Center (LOMC), Utilization, S&MA, and Facilities IPTs. It also provides for the review of issues at different forums: technical, management, and program levels. The MIPALS process is performed in coordination with the respective AITs.

10.11   Prelaunch/Postlanding Operations. The LSu IPT provides services for prelaunch and postlanding operations for the ISSP at KSC. This includes support to pre-Integration, Launch Package Physical Integration, performance of CITE Interface Verification Test (if required), transportation with Multiuse Mission Support Equipment (MMSE), and Shuttle Integration. Other services include performing late access or early access operations (for R&R only). Reference figure 10-2, Launch Site Integration Process Flow

Pre-Shuttle Integration	Launch Package Physical Integration	Shuttle Integration	Launch & Landing Operations & Deintegration*

- Remove from Transportation Canister
- Receipt & Inspection
- Post-delivery Checkout
- Final Servicing & Element Closeouts
- Cargo Element Weight & CG

- Launch Package Assembly
- Configure for Launch
- Launch Package Closeouts

- CITE (if necessary)
- Weight & CG
- Canister Operations
- PCR Operations
- Installation into Orbiter
- Orbiter Interface Verification Tests
- Payload Bay Closeouts

- Shuttle Payload Monitoring (Launch Commit Criteria)
- Scrub Turnaround
- LAUNCH
- Postlanding Operations

* If required

Figure 10-2. Launch Site Integration Process Flow

11.0   Risk Management and Metrics Reporting

11.1   Risk Management.
The teams within the LSu IPT will perform the normal assessment of the risks associated with the testing and other activities done at KSC. Any findings that indicate Program level risks will be elevated to the appropriate Program IPT

11.2   Metrics Reporting.

This section serves to initiate measurable reporting devices for LSu IPT processes. Performance will be consistent with guidelines as stipulated in the *ISS Performance Metrics Plan*, D684-10057-01.

11.2.1 Team Action Item Metric.

OBJECTIVE: To illustrate the cumulative number of action items accepted by the Launch Support IPT vs the cumulative number of action items closed. This also serves as an indication of the rate of action acceptance and closure.

DATA SOURCE: Launch Support Action Item Data Base.

11.2.2 Prelaunch/Postlanding Processing Requirements Data Base (P3RDB) Requirements Metric

OBJECTIVE: An illustration of the amount , rate, and success of planned vs. validated requirements derived from program document between our own Launch Support IPT and the Launch Package IPTs

- Measures the cumulative number of P3RDB requirements coordinated with the LP IPTs

- Measures the cumulative number of P3RDB requirements planned and validated by the Launch Package IPTs

DATA SOURCE: P3RDB, LPr IPTLeads

11.2.3 Manpower Utilization.

OBJECTIVE: Actual vs. planned manpower on a cumulative basis

DATA SOURCE: Financial management

11.2.4 Travel Budget.

OBJECTIVE: Actual vs. planned activities

DATA SOURCE: Financial management

11.2.5 Strategic Products Development.

OBJECTIVE: Manage LSu IPT strategic products that represent the total of the LPr
IPTproducts indentified in the Stragetic Plan Matrix. This data includes products being developed by
these IPTs as well as the external dependancies needed to support those products.

DATA SOURCE: LPr IPT Schedules

11.2.6 Support EquipmentRequirements Cycle Time

OBJECTIVE: To track the cycle time from requirement identification to SESS completion

DATA SOURCE: Data is provided by System Engineers within the LSuIPT.

11.2.7 PCM Activies Log

OBJECTIVE: To track Preliminary Change Memo (PCM) activity and closure effectiveness,
providing a focus on potential areas for process enhancsment.

DATA SOURCE: PCM Status Database.

11.2.8 Existing Payload Operations Metrics from Other Programs. In general, the capability already
exists for measurements to be easily incorporated from payload operations as ISS activities become
more tangible.

EXAMPLES: Jobs worked, PRACA, Schedule Delays, and Manpower availability

12.0   Secondary Level IPTs

The LSu IPT provides launch processing support and shuttle integration services for the ISSP. The functions and membership of the various LSu IPT sub-teams are described in paragraph 9.3.2.

Table 12-1 is a list of the ISS Assembly Sequence, sorted by which Launch Processing IPT has responsibility for each flight and notes which IPT is supporting.

Table 12-1. Assembly Sequence Launch Manifest

Based upon Assembly Sequence Launch Manifest dated 6/13/95

LPr IPT		FLIGHT #	RESP TEAM	INTERNATIONAL SPACE STATION ASSEMBLY ELEMENTS
PE Lead		2A	Boeing	Node - 1 w/ 2 ISPR
			MDA	Pressurized Mating Adapter - 1
			MDA	Pressurized Mating Adapter - 2
PE Lead		5A	Boeing	U.S. Lab w/ 4 System Racks
PE Lead		7A	Boeing	Airlock
UP Support			MDA	HP Gas on S/L pallet
PE Lead		10A	Boeing	Node-2 w/ 4 DDCU Racks, Cupola
PE Lead		14A		Centrifuge, S5
PE Lead		16A	Boeing	U.S. Hab w/ 6 racks

LPr IPT		FLIGHT #	RESP TEAM	INTERNATIONAL SPACE STATION ASSEMBLY ELEMENTS
UP Lead		3A	RD	Z1 Truss, S-Band Equipment
PE Support			MDA	Pressurized Mating Adapter - 3
R&R Support			Boeing	Ku-Band Antenna, EVAS, and CMGs on S/L pallet
UP Lead		4A	RD	P6 Truss w/ PV Array w/ 4 Batteries, EATCS Radiators, and S-Band Equipment
UP Lead		8A	MDA	S0 Truss w/ MT, GPS, A/L Spur, and Umbilicals
UP Lead		9A	MDA	S1 Truss w/ 3 Radiators, TCS, CETA, S-Band
UP Lead		11A	MDA	P1 Truss w/ 3 Radiators, TCS, CETA, UHF
UP Lead		12A	RD	P3 / P4, PV Array w/ 4 Battery Sets, 2 ULCAS
UP Lead		13A	RD	S3 / S4 Truss w/ PV Array w/ 4 Battery sets & 4 PAS
UP Lead		15A	Boeing	S6, PV Array w/ 4 Battery sets, Starboard MT/CETA rails

LPr IPT		FLIGHT #	RESP TEAM	INTERNATIONAL SPACE STATION ASSEMBLY ELEMENTS
R & R Lead UP Support Int'l. Support		6A	ISA MDA CSA	MPLM w/ 7 Lab System Racks UHF SSRMS on Spacelab Pallet
R & R Lead		UF-1	ISA	MPLM w/ ISPRs, 1 Storage rack , 2 PV battery sets on S/L Pallet
R & R Lead Int'l. Support		UF-2	ISA CSA	MPLM w/ ISPRs & 2 Storage racks MBS on Flight Support Equipment
R & R Lead		UF-3	KSC	MPLM w/ ISPRs, 1 storage rack, 1 O2 tank on ULC
R & R Lead		UF-4	KSC	2 ULC W/ Attached P/Ls, 1 O2 tank, Port MT/CETA rails, Centrifuge Umb
R & R Lead Util. Support Int'l. Support		02E	KSC ESA NASDA	MPLM w/ 1 U.S. Storage Rack, 7 ISPR Racks, 7 JEM Racks
R & R Lead		UF-5	KSC	MPLM w/ ISPRs & 1 Storage Rack
R & R Lead		UF-6	KSC	MPLM w/ ISPRs, 1 O2 tank on ULC
R & R Lead PE Support		17A	KSC	MPLM w/ 1 Lab System Rack, 8 Hab System Racks, 2 PV Battery Sets on ULC
R & R Lead PE Support		19A	KSC Boeing	MPLM w/ 11 U.S. Storage Racks, 3 Hab System Racks

Int'l. Lead Util. Support UP Support		01J/A	NASDA NASDA MDA CSA	JEM-ELM PS w/ 5 System Racks, 1 Storage Racks, 2 ISPRs JEM SFA P5 Truss W/ radiator OSE SPDM
Int'l. Lead		01J	NASDA NASDA	JEM PM w/ 3 System Racks JEM RMS
Int'l. Lead R & R Support		02J/A	NASDA NASDA RD/KSC	JEM EF ELM-ES ULC w/ 4 PV Battery sets

12.2 Launch Processing AIT (LPr AIT).

The LPr AIT has the responsibility of managing and integrating the subteams of the LSu IPT. Figure 12-1 shows the LPr AIT charter.

Parameters	Responsibilities/Functions
Purpose	• Integrate the planning and execution of launch site processing of all ISS elements and payloads to assure a coordinated multiflow analysis and assessment development.
Scope of Work	• Integration functions related to pre-launch processing at KSC • Support to Prime/PGs in integrating processing operations • Support to V-AIT activities and teams • Multiflow schedule development and conflict identification and resolution • Manifest assessment and integration for launch site activities • Integrate budget/schedule inputs for Launch Support IPT
Interfaces	• Launch Site AIT • Vehicle AIT sub-teams • Launch Processing IPTs • Operations IPTs • Other Launch Site AITs • Shuttle program
Members	• NASA Team Lead • Prime Contractor Personnel • Boeing Team Lead • Product Group Personnel • PGOC Team Lead • Requirements Integration Engineer • LPr IPT Lead • Manifest/Multiflow Engineer • LSSM • Other Launch Site Personnel
Description of Tasks	• Integration of planning and execution of launch site processing of S/S Elements • Development of processing multiflow assessment schedule • Identification and resolution of processing conflicts • Provide integrated data to LS AIT for program coordination • Development of integrated Deliverables schedules and external dependencies • Integration of processing capabilities requirements and coordination with other Launch Site IPTs • Development and input of integrated processing budget requirements/assessments • Manifest analysis and coordination as part of the Manifest IPT • Coordination of Vehicle AIT support from LPr IPTs • Coordination/integration of requirements tracking system utilization
Authority	• Team budget/cost responsibility • Team planning schedules • Team execution plan • Program integrated requirements for processing operations
Team Deliverables	• Budget/cost performance report • Budget planning input • Multiflow Assessment Schedule • Manifest assessments • Integrated processing operations plan • Integrated Deliverables schedules • Integrated conflict identification and resolution reports
Schedule	Attached
Approval:	_____ _____ _____ John Straiton James Werpy Mark Jager NASA Boeing PGOC

Figure 12-1. Launch Processing AIT Charter